

Application Number 10/784,109
Response to Office Action mailed January 31, 2008

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A radio frequency identification (RFID) system comprising:
an antenna that forms an electromagnetic field that defines a communication zone in which RFID tags can be read, wherein the antenna has a substantially planar form; and
a substantially-contiguous conductive shield positioned a distance from the antenna within a plane parallel to the antenna to define an outermost region of the communication zone within the plane parallel to the antenna, wherein the conductive shield has a width that extends in the plane parallel to the antenna such that the electromagnetic field at any region beyond the conductive shield is below a threshold level for communication with the RFID tags, and wherein the conductive shield comprises planar conductive regions oriented to form a non-shielded inner region, and further wherein the antenna is disposed within the non-shielded inner region and parallel to the planar conductive regions.

Claim 2 (Previously Presented): The RFID system of claim 1, wherein the width of the conductive shield within the plane parallel to the antenna shapes the electromagnetic field to extend substantially in a direction perpendicular to the antenna, and prevents the electromagnetic field from forming substantially over the conductive shield.

Claim 3 (Canceled).

Claim 4 (Currently Amended): The RFID system of claim 13, wherein the conductive regions define at least one disconnect area that prevents the conductive shield from forming a closed conductive loop around the antenna.

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Claim 5 (Currently Amended): The RFID system of claim 13, wherein the antenna comprises one or more conductive loops including an outer loop, and the conductive regions of the conductive shield are located at least a distance D from an outer loop of the antenna that is selected based on a radius of the outer loop.

Claim 6 (Currently Amended): The RFID system of claim 13, wherein the antenna has a first conductive loop having a radius D1 and a concentric second conductive loop having a radius D2, and the conductive regions of the conductive shield are located at least a distance D3 from the outer loop, and wherein D3 is selected as approximately the average of D1 and D2.

Claim 7 (Currently Amended): The RFID system of claim 13, wherein each of the conductive regions have respective widths extending outward from the antenna, and further wherein each of the widths are selected based at least in part on the threshold level of the magnetic field necessary for RFID communication between the antenna and the RFID tags.

Claim 8 (Previously Presented): The RFID system of claim 7, wherein each of the widths are selected to extend sufficiently in directions parallel to and outward from the antenna to prevent the electromagnetic field from forming in or above the conductive regions until the strength of the magnetic field reduces to below the threshold level.

Claim 9 (Original): The RFID system of claim 1, wherein the antenna and the conductive shield are mounted to a working surface of an RFID check-in / check-out area.

Claim 10 (Original): The RFID system of claim 9, wherein the working surface has a recessed area and a non-recessed area, and further wherein the antenna is mounted to the recessed area of the working surface and the conductive shield is mounted to the non-recessed area.

Claim 11 (Original): The RFID system of claim 1, wherein the conductive shield and the antenna are co-planar.

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Claim 12 (Original): The RFID system of claim 1, wherein the conductive shield and the antenna are located in two different parallel planes.

Claim 13 (Original): The RFID system of claim 1, further comprising:

an RFID interrogation device coupled to the antenna, wherein the interrogation device interrogates the RFID tags to obtain information regarding associated articles; and

a computing device to process the information retrieved from the RFID interrogation device.

Claim 14 (Original): The RFID system of claim 1, wherein the antenna comprises a plurality of conductive loops to produce the electromagnetic field, and wherein the conductive loops are spaced apart at least a distance D that is selected based on a dimension of the RFID tags with which the antenna communicates.

Claim 15 (Original): The RFID system of claim 14, wherein the distance D is selected to exceed a maximum dimension of the RFID tags.

Claim 16 (Original): The RFID system of claim 14, wherein the RFID tags have a dimension of length M, and the distance D between each of the plurality of conductive loops is selected such that $D \geq M$.

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Claim 17 (Currently Amended): A method comprising:

providing an antenna that forms an electromagnetic field that defines a communication zone in which RFID tags can be read, wherein the antenna has a substantially planar form;

selecting a width of a substantially-contiguous conductive shield such that when the conductive shield is positioned a distance from the antenna within a plane parallel to the antenna to define an outermost region of the communication zone within the plane parallel to the antenna, the electromagnetic field at any region beyond the conductive shield is below a threshold level for communication with the RFID tags; ~~and~~

orienting planar conductive regions of the conductive shield to form a non-shielded inner region; and

positioning the substantially-contiguous conductive shield having the selected width around the antenna within the non-shielded inner region a distance from an outer loop of the antenna and parallel to the planar conductive regions.

Claim 18 (Previously Presented): The method of claim 17, wherein selecting the width of the substantially-contiguous conductive shield comprises selecting the width to shape the electromagnetic field to extend substantially in a direction perpendicular to the antenna and prevent the electromagnetic field from forming substantially over the conductive shield.

Claim 19 (Canceled).

Claim 20 (Currently Amended): The method of claim ~~17~~¹⁷⁴⁹, further comprising selecting each of the widths of each of the conductive regions based at least in part on the threshold level of the magnetic field necessary for RFID communication between the antenna and the RFID tags.

Claim 21 (Previously Presented): The method of claim 20, wherein selecting each of the widths comprises selecting each of the widths to extend sufficiently in directions parallel to and outward from the antenna to prevent the electromagnetic field from forming in or above the conductive regions until the strength of the magnetic field reduces to below the threshold level.

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Claim 22 (Previously Presented): The method of claim 17, further comprising mounting the antenna and the conductive shield to a working surface of an RFID check-in / check-out area.

Claim 23 (Previously Presented): The method of claim 22,
wherein the working surface has a recessed area and a non-recessed area, and
wherein mounting the antenna and the conductive shield comprises mounting the antenna to the recessed area of the working surface and mounting the conductive shield to the non-recessed area.

Claim 24 (Previously Presented): The method of claim 17, further comprising:
interrogating the RFID tags with an RFID interrogation device coupled to the antenna to obtain information regarding articles associated with the RFID tags;
retrieving the information from the RFID interrogation device with a computing device,
and
processing the information with the computing device.

Claim 25 (Previously Presented): The method of claim 17, further comprising:
determining a dimension M of the RFID tags for use within an RFID system;
selecting a distance D based on the dimension M; and
positioning a plurality of conductive loops of the antenna the selected distance D apart for communication with the RFID tag within the RFID system.

Claim 26 (Previously Presented): The RFID system of claim 1, further comprising
an RFID reader that incorporates the antenna; and
a computing device to control the RFID reader.